

"It has been laid down that evolution, in its most perfect conception, would be such that the development of every creature would be compatible with the equal development of every other. In such a system it is said there would be no 'struggle for existence—no harmful competition, no mutual devouring—no death' (Herbert Spencer, 'Data of Ethics,' chap. ii. pp. 18, 19). The inspired imaginings of the Jewish prophets of some future time when the lion shall lie down with the lamb, and the ideas which have clustered round the Christian heaven, are more probably the real origin of this conception than any theory of evolution founded on the facts and laws of nature."

It is needless to say that no more ridiculous travesty than this could well be imagined, or that no such absurdity as that which professes to be formally quoted from Mr. Spencer is to be found either under the reference given or in any other part of his writings. In short, this "most perfect conception" of evolution is a pure invention, which reads almost as if it were intended to misinform the uninformed. We do not, however, suppose that such is the case. This extreme of inaccuracy we take to have been reached by the habit of drawing upon "inner consciousness," until not only the whole sense and substance of other writings are perverted, but even the most pure and delicious nonsense is seen by "the mind's eye" to occur in particular words on a particular page of some other book.

If space permitted or need required, we could point out other inaccuracies, and even still greater absurdities, both in this chapter and elsewhere; but we have doubtless already said more than enough to show that "The Unity of Nature" can scarcely be considered a successful work from a scientific point of view.

GEORGE J. ROMANES

### OUR BOOK SHELF

*The Electrician's Directory, with Handbook for 1884.* 67 pp. (London: Electrician Office, 1884.)

THIS work, now in the second year of publication, contains much information of use to electric and telegraphic engineers. Amongst its contents are comprised a list of new electric companies, a list of provisional orders granted by Parliament for electric lighting, a list of the "British Cable Fleet," a list of British railways and railway officials, a fairly complete directory of the professions and trades connected with electricity; also a large amount of statistical information about different kinds of dynamo machines, electric lamps, and telegraph tariffs, much of which will doubtless be out of date in twelve months' time. There is also an obituary of electricians deceased in 1883, a table by Mr. Geipel of the cost of electric conductors as calculated by Sir W. Thomson's formula, and a set of tables by Mr. Crawley for corrections of measurements in horse-power and in watts. These two sets of tables are the only portion of the work claiming independent scientific value. We object entirely to Mr. Crawley's gratuitous remark in the prefatory paragraph of his section that the accepted system of electric units was "really foisted upon electricians by men devoted more to theoretic than to practical work." Nothing could be further from the truth than to accuse Mr. Latimer Clark, Sir Charles Bright, who originated the system, and Sir William Thomson, who did so much to perfect it, of not being practical workers. As a matter of fact, *ohms, volts, farads, and webers* were used by practical electricians for years before they found their way into the text-books written by the theorists.

### LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

#### On a "Magnetic Sense"

SIR WILLIAM THOMSON, in his presidential address at the Midland Institute, which is reported in NATURE for March 6 (p. 438), draws attention to the marvellous fact that hitherto we have no evidence to show that even the most powerful electromagnets can produce the slightest effect upon a living vegetable or animal body. But Sir William "thinks it possible that an exceedingly powerful magnetic effect may produce a sensation that we cannot compare with heat, or force, or any other sensation," and hence he cannot admit that the investigation of this question is completed,—for although the two eminent experimenters named by Sir W. Thomson felt nothing when they put their heads between the poles of a powerful electromagnet, it does not follow that, therefore, every member of the human race would feel nothing.

May I be permitted to point out that some slight evidence already exists in the direction sought by Sir W. Thomson? Scattered in different publications there are numerous statements made by different observers in different countries during the present century, which, if trustworthy, indicate that upon certain human organisms a powerful magnet does produce a very distinct and often profound effect. Unfortunately, with the exception of the careful and excellent observations made by Dr. W. H. Stone, who tried Charcot's experiments on a patient of his at St. Thomas's Hospital, the observations referred to are singularly wanting in precision of statement and in a due recognition of the precautions needful in order to avoid fallacious or ambiguous results from illusions of the senses.

This being the case, an attempt is being made by the Society for Psychical Research to ascertain—by direct and careful experiment, extending over a wide range of individuals—whether any trustworthy evidence really exists on behalf of a distinct magnetic sense. The sectional Committee of that Society intrusted with this and cognate work has published a preliminary report,<sup>1</sup> which contains a fragment of evidence pointing in the direction of the existence of a magnetic sense in certain individuals. Three persons have been found by the Committee, who, when their heads were placed near the poles of a powerful electromagnet, could tell by their sensations when the magnet was excited or not. One of these "sensitives" told the investigating Committee accurately twenty-one times running whether the current was "on" or "off" from a peculiar and unpleasant sensation he alleges that he experienced across his forehead. Every precaution that suggested itself was taken to prevent the subjects gaining any information through the ordinary channels of sensation of what was being done at the contact-breaker placed in another room. But I am sure the Committee will gratefully welcome any criticism of their procedure or suggestions for future experiment which Sir William Thomson may feel inclined to give. The honorary secretary of the Committee is Mr. W. H. Coffin, Cornwall Gardens, S.W.

Two or three months ago one of the gentlemen who appeared to have this magnetic sense was in Dublin, and I took the opportunity of repeating with care in my own laboratory the experiments previously made at the Society's rooms in London. The result satisfied me that this individual did in general experience a peculiar sensation, which he describes as unpleasant, when his head was within the field of a powerful magnet. Nevertheless the keenness of his magnetic sense, if such it be, varied considerably on different days, and sometimes he stated that he could detect little or no sensory effect. Usually the effect was felt most strongly when the forehead was in the line joining the two poles; but one day, when he was suffering from facial neuralgia, he found that his face was the most sensitive part, and complained of a sudden increase of pain whenever the magnet was excited, his face being near the poles. Sufferers from neuralgia among the students of science may therefore have a new and useful career before them, in the pursuit of which

<sup>1</sup> *Proceedings of the Society for Psychical Research*, Part 3. (Trübner and Co.)

their increased torture will, it is to be hoped, be vanquished by a far stronger intellectual joy.

The peculiar and unpleasant sensation which the magnet appeared to produce on the subject just referred to was described as slowly rising to a maximum in fifteen or twenty seconds after the current had been sent round the coils of the electromagnet. In like manner the effect seemed to die down slowly after the contact was broken. Unknown to the subject, the circuit was closed and opened several times, and the magnetism correspondingly evoked or dissipated, the result being that there was a fairly accurate correspondence between the physical and the psychical effect. The faint molecular crepitation which accompanies the magnetisation of iron, and can be heard when the ear is very near the magnet, is, however, very apt to mislead the imagination. To avoid this, the subject was placed at a distance where this faint sound could not be heard, and he was then requested to walk up to the electromagnet, and, judging only from his sensations, to state if the current were "on" or "off." The experiment was made twelve times successively, and he was correct in ten out of the twelve trials. He had no means of seeing or hearing the contact-breaker; of course, it is possible for a trickster, using a concealed compass-needle, to be able to impose on a careless experimenter, but care was taken, and I have not the least reason to doubt the entire *bona fides* of the subject of this experiment. Obviously the foregoing observation is but of little value unless corroborated by a far more extensive series of experiments, conducted with the most stringent precautions to avoid the creation of illusory effects.

I have tried experiments with large helices encircling the limbs and head, and animated by powerful currents, but have not observed any peculiar sensory effect in my own case, though I am inclined to think the headache which I have often experienced when working with a large magnet may not be altogether an accidental coincidence. Meanwhile experiments are in progress in my laboratory to ascertain, if possible, whether any sensory effect is produced upon lower organisms. I hardly anticipate any affirmative results, but it seemed worth making a systematic investigation from minute structures up to man. Sir W. Thomson's address will, I hope, stimulate other workers in this field.

W. F. BARRETT

Royal College of Science, Dublin, March 11

### Instinct

I WRITE one more letter on this subject, in order to observe that I do not think the only remaining difference between Mr. Lloyd Morgan and myself is so great as it may be apt to appear. In my books I have been careful to point out the peculiar disabilities under which the science of comparative psychology labours from its necessarily ejective character. But while in Mr. Morgan's view these disabilities are so great as to render any science of comparative psychology impossible, in my view they are not quite so great. I quite agree with the quotation which he gives from Prof. Huxley on the crayfish; but this does not amount to saying that no science of comparative psychology is possible. We may still, for instance, feel perfectly certain that a dog is a more intelligent animal than a crayfish, and in this we have a purely scientific proposition.

The difference, therefore, between Mr. Morgan and myself is more apparent than real, and depends upon what we mean by "a science." This is the question that must be answered before we can proceed to consider the question raised by him, viz. "Is a science of comparative psychology possible?" In my estimation the possibility of a science is furnished wherever there is material to investigate. The more vague the material, the less exact must be the science, and on this account, no doubt, comparative psychology is the least exact of all the sciences. But so long as its subject-matter admits of any investigation at all, so long, it seems to me, comparative psychology is a science.

GEORGE J. ROMANES

### The Remarkable Sunsets

WITH reference to the theory that the red sunsets are due to volcanic dust in the air, I think that the following extract from a letter which has been forwarded to me is of considerable interest. The writer is Mr. Frederick Spofforth, and his letter is dated January 29, from Collaroy, 150 miles from Sydney. It will be observed that the corroboration which he gives to the theory in

question is the more striking from the fact of its being so completely unconscious.

GEORGE J. ROMANES

"A most peculiar sight this summer are the sunsets. The sun always goes down as red as can be, and half the night there is the same roseate hue, which lasts till past midnight. Many causes are given for it, but nearly all differ.

"Another curious thing is the enormous amount of dust—even up here, where you see nothing but trees as far as the horizon on all sides. Some days the whole landscape will be covered in dust, and where the dust comes from nobody can tell. It is always worst in the early morning."

### Right-sidedness

MR. LE CONTE (*NATURE*, xxix. p. 452) seems rather to complicate than to simplify this question. If the right side of his body shows more dexterity than the left, surely it is his left eye that should share this excellence, if we are to suppose that this difference in dexterity depends upon any central origin. A person paralysed on the left side of the body loses sight—if sight be lost at all—in the right eye, and *vice versa*. Further, I am right-handed, and use an eyeglass in my left eye; yet, though the right eye is the weaker, I use it for a telescope or microscope by unconscious preference. On the other hand, most persons who use a single eyeglass wear it in the right eye. I may have adopted the left for ease in adjusting the glass, so that my right hand might be free. When I am reading, if I put my hand in front of my left eye, I am conscious of some muscular alteration; if I obscure my right eye, I notice nothing but a slight diminution of the sense of light, white objects seeming less white to my right eye than to my left. And this effect is just as noticeable when I wear spectacles as when I am reading without them; so that my myopia is not the cause of the difference.

In discussing right-sidedness—whether we regard the decussation of the nerves in the medulla oblongata or not—we must not forget that prize-fighters normally strike with the left hand, using the right as a guard or to deliver the second blow; perhaps this is to gain the advantage of the greater strength of the right leg. Moreover, the habit among Western nations of writing from left to right appears to argue that right-handedness is the rule among them: but Orientals reverse the process, so that the majority of mankind must be left-handed. What do the anthropologists say to this?

Mr. Charles Reade, writing in the *Daily Telegraph* some years ago, argued that if the habitual use of the right hand led to a greater development of the left side of the brain, a further acquired use of the left hand would aid the development of the right cerebral hemisphere, and so increase the general power of the brain. But is there any evidence to show that ambidextrous people, left-handed apparently by nature, and right-handed from habit, have any general mental advantage over their fellows? I think not.

HENRY T. WHARTON

39, St. George's Road, Kilburn, March 17

IN my own experience (I can with confidence only give that) I differ almost wholly from that of Mr. Joseph Le Conte, as expressed in *NATURE* (p. 452). In my case strength and dexterity of arm do not in *everything* go together. For instance, although strongly left-handed, I learnt to write with the right hand and shoot from the right shoulder, and could do either very indifferently indeed if attempted with the left hand or arm. I perhaps may call myself with truth a rather handy man, improved upon by living for many years in places where tradesmen were not to be had. In all connected with pencil, pen, ink, and paper, such as printing, chart-making, my left hand, although strongest, was clumsy, whereas my right showed considerable skill, as was exhibited once in rather a ludicrous manner by the Hydrographer of the Admiralty mistaking my pen-and-ink chart of some seven hundred miles of Arctic discovery for an engraving of the same. My left leg is the stronger, yet I use it in kicking and in other ways requiring dexterity; e.g. when very many years younger I could perform the many curious movements or steps of some of our Scottish dances with much more accuracy and ease with the left foot than with the right. I fear the subject-matter of this note may be scarcely considered a valid excuse for so much self-notice.

JOHN RAE

4, Addison Gardens, March 15